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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/871,779

06/01/2001

Dunling Li

TI 32794

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06/10/2005

TEXAS INSTRUMENTS INCORPORATED
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EXAMINER

OPSASNICK, MICHAEL N

ART UNIT

PAPER NUMBER

2655

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,779

Applicant(s)

LI ET AL.

Examiner

Michael N. Opsasnick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/21/2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/9/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benyassine et al. (IEEE 0163-6804/97) in view of Li et al (US6381570).

As per claims 17,18, Benyassine et al. discloses the method of converging an ITU Recommendation G.729 Annex B voice activity detection (VAD) device, comprising the steps of: determining a noise identification threshold value; comparing a number of energy measures of a signal to said noise threshold value (Page 67, Paragraphs 8 - 11), determining a first value representing an average of said number of energy measures, when said energy measure is less than said noise threshold, wherein only the energy measures of said number of energy measures having values less than said noise threshold value are used to determine said first value (Page 68, Paragraph 2), determining a second value representing an average of said number of energy measures (Page 68, Paragraphs 2 - 3); and substituting said first value for said second value when a specific event occurs - page 68, Paragraph 3). Benyassine et al. also discloses

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determining a differential spectral distance comparison of the Itakura distances, ΔSD , between a current spectral state of said signal and a value representing an average of a number of prior spectral states of said signal, page 68, Paragraph 5); updating a first set of values representing averages of said signal's noise characteristics, when said energy measure is less than said noise threshold', updating a second set of values representing averages of said signal's noise characteristics, when said energy measure is less than a reference value and said differential spectral distance has a value less than about 0.0637; and substituting said first value for said second value when a specific event occurs, page 68, Paragraph 5).

Benyassine et al. discloses the method of converging an ITU Recommendation G.729 Annex B voice activity detection (VAD) device as discussed above, but does not disclose the method further comprising the steps of: determining the lesser of two values $T_{sub.1}$ and $T_{sub.2}$, multiplying said lesser value of $T_{sub.1}$ and $T_{sub.2}$ by two to obtain a product', comparing said product to a value of -21 dBm; assigning the lesser value of -21 dBm and said product to said noise threshold value for an updating period, $\tau_{sub.p}$. In addition, Benyassine et al. do not disclose the method comprising the steps of: measuring the maximum block energy occurring during said updating period, $\tau_{sub.p}$, and assigning said measured maximum block energy to $E_{sub.max}$; measuring the minimum block energy occurring during said updating period, $\tau_{sub.p}$, and assigning said measured maximum block energy to $E_{sub.min}$; calculating said value of $T_{sub.1}$ given by the equation $T_{sub.1} = E_{sub.min} + (E_{sub.max} - E_{sub.min})/32$, and calculating said value of $T_{sub.2}$ given by the equation $T_{sub.2} = 4 * E_{sub.min}$. However, Li et al. teach the method further comprising the steps of:

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determining the lesser of two values $T_{sub.1}$ and $T_{sub.2}$, multiplying said lesser value of $T_{sub.1}$ and $T_{sub.2}$ by two to obtain a product', comparing said product to a value of -21 dBm; assigning the lesser value of -21 dBm and said product to said noise threshold value for an updating period, $\tau_{sub.p}$ (Col 7, Lines 48 - 60). Threshold setting schemes are important. In addition, Li et al. also teaches the method comprising the steps of: measuring the maximum block energy occurring during said updating period, $\tau_{sub.p}$, and assigning said measured maximum block energy to $E_{sub.max}$; measuring the minimum block energy occurring during said updating period, $\tau_{sub.p}$, and assigning said measured maximum block energy to $E_{sub.min}$; calculating said value of $T_{sub.1}$ given by the equation $T_{sub.1} = E_{sub.min} + (E_{sub.max} - E_{sub.min})/32$, and calculating said value of $T_{sub.2}$ given by the equation $T_{sub.2} = 4 * E_{sub.min}$ (Col 7, Line 40 - Col 8, Line 10). In a dynamic speech coding scheme, an adaptive estimate of noise and active signal levels based on minimum and maximum block energy is crucial for high performance voice activity detection.

As per claim 18, Benyassine et al. discloses extracting a set of parameters characterizing a signal from a digital representation of said signal within a data frame, wherein said parameters are the autocorrelation coefficients, which are derived in accordance with said Recommendation G.729, and are denoted by $(R(i))_{i=0}^{sup.p}$ (Page 66, Eqn. 1), calculating a full-band frame energy by multiplying a value of ten times a base ten logarithm of a quotient obtained by dividing a first autocorrelation coefficient $R(0)$, of said autocorrelation coefficients, by a constant value of 240 (Page 66, Paragraphs 1 ; Eqn 1).

As per claims 19,20, Benyassine et al. discloses comparing said full-band frame energy with a reference level, page 66, Paragraph 8); and changing the value of a frame counter during said initialization only if said full-band frame energy equals or exceeds said reference level (page 67, Paragraphs 3 - 7).

As per claims 21, Benyassine et al discloses the full band energy noise frames comparing said full-band frame energy with a reference level, page 66, Paragraph 8); and changing the value of a frame counter during said initialization only if said full-band frame energy equals or exceeds said reference level (page 67, Paragraphs 3 - 7). Examiner notes that the claimed equation containing the -70dbm is disclosed in the ITU-T G.729 Annex B (applicants specification pp 5 lines 1-5 referring back to pp 4 lines 9-25, admits this portion of the Annex B), and Benyassine et al discloses the use of Annex B, as shown above in claim 17.

As per claims 22-24, Benyassine et al. disclose the method of converging an ITU Recommendation G.729 Annex B voice activity detection (VAD) device as described in claim 17 . Benyassine et al. do not disclose the step of: updating said noise threshold value, with an elapsed time frame; wherein the time frame is about every 1.28 seconds during a communication link. However, Li et al. teaches the step of: updating said noise threshold value about every 1.28 seconds during a communication Link (CoI 6, Line 25- 35). An Update period of 1.28 seconds is used for the desired compression, active signal quality and bandwidth savings. Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify Benyassine et al. with updating said noise threshold value about every 1.28 seconds during a

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communication link as described by Li since it is necessary for the desired compression, active signal quality and bandwidth savings. (Li, abstract).

Response to Arguments

3. Applicant's arguments filed 1/21/2005 have been fully considered but they are not persuasive. Applicant's arguments pertain to the newly filed claims; examiner also notes that the claim scope of the new claims are very similar to the claim scope of the canceled claims, and therefore are rejected under similar rationale as presented in the office action mailed 8/19/2004.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872 9314,

(for informal or draft communications, please label "PROPOSED" or

"DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121

Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Opsasnick, telephone number (571)272-7623, who is available Tuesday-Thursday, 9am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Wayne Young, can be reached at (571)272-7582. The facsimile phone number for this group is (571)272-7629.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571)272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mno
6/7/05


W. R. YOUNG
PRIMARY EXAMINER